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ABSTRACT

Some new approaches to the assessment and treatment of language handicaps suggest the need to examine relationships between verbal creativity and language performance. Data were collected from 40 normally developing white fourth, fifth, and sixth grade children, drawn from both urban and rural communities and from a middle socioeconomic level. Subjects were given the Torrance Tests of Creative Thinking--Verbal and six commonly used measures of language performance including the Peabody Picture Vocabulary Test--Revised, and an expressive language subtest of the Clinical Evaluation of Language Function. An oral language sample was judged for mean length of utterance, semantic complexity, and verbal fluency. Statistical analyses yielded only one moderate and positive correlation between verbal creativity (the Verbal Flexibility subtest of Torrance) and one language performance measure (the Peabody). Results of a stepwise regression indicated that verbal creativity measures--the Verbal Fluency, Verbal Originality, and Verbal Flexibility Torrance subtests--could not be used to predict selected language performance measures. Results suggest a distinction between the skills needed for encoding and decoding of language and the creative or divergent use of language. Programs for linguistically handicapped persons need to emphasize language use in novel, varied, and more generalized situations. (DB)

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The Relation of Measures of Verbal Creativity to Selected Measures of Language Performance

A Poster Session
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Abstract

The purpose of this study was to explore possible relations between verbal creativity as measured by the Torrance Tests of Creative Thinking-Verbal and six measures of language performance. Also of interest was the possibility of using verbal creativity measures which were viewed as divergent semantic tasks to predict a subject's language performance. Data was collected on a sample of 40 normally developing white fourth, fifth and sixth grade children. The subjects were drawn from both urban and rural communities and from a middle socioeconomic level. Statistical analyses yielded only one moderate and positive correlation between one measures of verbal creativity (Verbal Flexibility) and one language performance measure (Peabody Picture Vocabulary Test-Revised). Results of a stepwise regression indicated that verbal creativity measures (Verbal Fluency, Verbal Originality, and Verbal Flexibility) could not be used to predict selected language performance measures.

The Relation of Measures of Verbal Creativity to Selected Measures of Language Performance

Statement of the Problem

A review of typical evaluative and therapeutic procedures used by professionals interested in the assessment and treatment of language impaired children indicates an overwhelming reliance on highly controlled clinical contexts as well as diagnostic and treatment procedures which pertain to the individual's convergent-semantic production skills. Newer ideas of communicative competence (Ervin-Tripp, 1973; Holland, 1975; Hymes, 1970, 1971), the growing interest in a holistic view of communication as exemplified by Bales (1950), Austin (1962), Searle (1962) and Chapey (1976; 1981), the increased interest in children's development of discourse abilities (Wells, 1981), and the treatment of mild language problems of the adolescent learning disabled child (Chafe,, 1970; Muma, 1979; Perkins, 1978; Thorum, 1980; Weig and Semel, 1976, 1975, 1973, 1980) require that the language researcher begin to consider the individual's ability to formulate discourse or in Guilford's (1967) terminology, divergent-semantic production.

A preliminary step in beginning to develop a better understanding of the relationship of divergent production ability with language performance would be the comparison of performances on presently used measures of linguistic ability with tasks requiring primarily divergent production. This comparison should offer a preliminary measure of the degree to which language performance, as measured by the most feasible and widely used methods currently available, is correlated with divergent production modes.

RESEARCH QUESTION

The purpose of the present study was to examine the relationship of certain measures of divergent-semantic production in the form of verbal creativity tasks with six traditional measures of language development and complexity in normally developing pre-adolescent children. Specifically this study was designed to analyze data in order to answer the following question:

> Are any of six measures of language performance (encoding and decoding) related to or predicted by three measures of creative verbal thinking (divergent-semantic productions).

SUBJECTS

The sample for this study consisted of forty (17 males and 23 females) white, fourth, fifth, and sixth grade children. The subjects were drawn from both urban and rural communities. All subjects were designated by their school administration as functioning within plus or minus six months of their grade level in reading. Additionally, all subjects came from families in which both parents had obtained at least a high school diploma and had an annual income of $20,000 or more. A more precise breakdown of the sample according to parental education, grade and sex of subjects and age and sex of subjects can be found in Table 1, 2, and 3 respectively.

INSTRUMENTATION

Data were collected on each subject using the following instruments:

1) Torrance Tests of Creative Thinking-Verbal (TTCT)
2) Peabody Picture Vocabulary Test-Revised
3) "Producing Formulated Sentences Subtest" of the Clinical Evaluation of Language Function
4) "Listening/Grammar Subtest" of the Test of Adolescent Language
5) An oral language sample from which the following measures were derived:
   a) Mean Length of Utterance
   b) Judged Semantic Complexity
   c) Judged Verbal Fluency

Raw scores from all tests were used for statistical analysis.

RESULTS

Data collected from the sample was subjected to the following descriptive statistical analysis:

1) In order to evaluate for heterogenicity of the sample population means, standard deviations, and value ranges for the various tasks presented were calculated. Results may be found in Tables 4 and 5.
2) To test for possible correlations between and/or among tasks an inter-correlation matrix was constructed. Results may be found in Table 6.
3) Intrajudge scoring reliability (two weeks between scorings) was calculated using a standard Pearson-Product Moment Correlation. Analysis yielded a very strong and positive relations between the two scorings (r=.990; df=38; p<.0001).

4) To examine interjudge reliability for Judged Fluency and Semantic Complexity a covariance matrix was constructed. Results yielded a strong and positive interjudge reliability for Judged Fluency (r=.865; df= 39; p<.0001) and for Judged Semantic Complexity (r=.909; df=39; p<.001).
5) A stepwise regression statistical procedure was employed using verbal creativity measures as predictor variables and language performance measures as criterion variables. A maximum R^2 improvement technique was utilized. Results may be found in Table 7.

SUMMARY OF RESULTS

It can be assumed based upon review of the descriptive statistics that the sample from which data was extracted showed reasonable variability and the sample can be judged to be heterogeneous. Results from the correlations between the TTCT measures and the language measures (as well as among the various language measures) indicated enough unexplained variance to warrant use of all the measures as separate tasks. Intrajudge reliability for scoring of the Formulated Sentences showed remarkable consistency across time. Likewise, consistency of ratings among judges on Judged Fluency and Semantic Complexity was demonstrated by high interjudge reliability scores. Finally, using verbal creativity scores as predictor variables and language performance tasks as criteria variables analysis indicated that significant contributions to the criterion variables by the predictor variables were not present.

IMPLICATIONS FROM THE RESULTS

If the creative verbal abilities (divergent-semantic production as measured by the TTCT-V do not correlate with measures of language encoding and decoding performance, and if the basic language performance tasks cannot be predicted by the TTCT-V, certain practical implications become apparent. First, it would seem that the addition of the verbal creativity subtests of the TTCT-V to any battery of basic language performance measures would result in additional and uncorrelated measures of verbal functioning. Second, the clinician and remedial teacher may need to instruct students in the creative or divergent use of language, using such methodologies as those suggested by Chapey (1981), Holland (1977, 1978), Rees and Shulman (1978), and Robinson (1972), in order to fully develop the language-impaired person's skills, especially in the domain of divergent verbal expression. Third, the data from this study would appear to suggest that skills used in the basic encoding and decoding of language may be unrelated to the use of such skills in novel settings and/or new

situations. The clinical implication of such a finding would be that programs for the linguistically handicapped might need to place more emphasis on encoding and decoding of language in novel, varied, and more generalized contexts in order to stimulate expression of novel or more individualized ideas, placing less emphasis on the grammatical correctness or completeness of an expression, as suggested by Perkins (1978).

IMPLICATIONS FOR ADDITIONAL RESEARCH

It is fully understood that additional research is needed before the above assumptions can be completely accepted. Such projected research might necessitate using a small sample from which a more naturalistic or pragmatic language sample has been collected, thus allowing for expression of greater variability in the creative and divergent use of language. This sampling could then be compared to those same subjects' semantic and syntactic language abilities.

In addition to the use of a more naturalistic language sample, it may prove fruitful to form a detailed comparison of a subject's associative semantic network with his/her creative and divergent use of language. This could possibly be achieved through investigation of multiple word definitions (Thorum, 1980), idiom and proverb understanding (Semel & Wiig, 1980), and communality of verbal association responses (Chapey, 1974; Felsnenstein, 1971). A comparison between creative and divergent verbal expression as measured by the TTCT-V and a subject's ability to generate multiple responses expressing the same idea or the condensing of two or more simple sentences into compound and compound-complex forms (Thorum, 1980) might also prove beneficial.

In terms of clinical implications, the results of this study appear to indicate the need for investigation into the use of divergent-semantic therapies for the correction or remediation of linguistic handicaps. Such studies could be single-subject or multiple-subject in design and could possibly utilize face-to-face conversations as suggested by Holland (1977, 19787), Wilcox and Davis (1978) or Haire and Davis (1979). Such studies could attempt to examine the appropriateness of such therapeutic programs in terms of the nature of the subject's linguistic disorder and the subject's age-appropriateness for such programs.

SUMMARY

The preceding study was conducted to explore possible correlations between divergent-semantic productions98ns as measured by verbal creativity on the TTCT-V and six measures of language performance, and to determine if any of the six language performance measures could be predicted using the verbal creativity measures of the TTCT-V. Responses were elicited from a

sample of 40 normally developing white fourth, fifth, and sixth grade children.

Analysis of the data revealed only one moderate and positive correlation between one measure of verbal creativity (Verbal Flexibility) and one language performance measure (PPVT-R). Results of a stepwise regression with verbal creativity measures as predictor variables and language performance measures as criterion variables indicated that scores on the language performance tasks could not be predicted by knowing responses obtained from verbal creativity tasks.

Results were interpreted to indicate a distinction between skills necessary for the basic encoding and decoding of language and the creative or divergent use of language. Given such results, one must begin to question the completeness of language test batteries that do not incorporate specific measures of the divergent use of language. The need to develop programs for linguistically handicapped individuals which place more emphasis on encoding and decoding of language in novel, varied and more generalized context would also appear to be an implication of the findings of this study.

Table 1

Parental Education Level of Subjects

	Mean Years of Formal Education	Range
Mother	13.55 years	12-18 years
Father	14.00 years	12-20 years
Both Parents	13.76 years	12-20 years

Table 2

Grade and Sex of Subjects

Grade	Male	Female	Total
Fourth	5	9	14
Fifth	7	7	14
Sixth	5	7	12

Table 3

Age and Sex of Subjects

Age in Years	Male	Female	Total
9	5	2	7
10	7	8	15
11	3	5	8
12	2	8	10

Table 4

Means, Standard Deviations and Value Ranges:
Verbal Creativity Measures

Verbal Creativity Measure	$\overline{X}$	SD	Value Range
X_1 Verbal Fluency	76.80	29.66	31.00 to 154.00
X_2 Verbal Originality	51.43	25.98	10.00 to 118.00
X_3 Verbal Flexibility	30.65	8.97	14.00 to 48.00

Table 5

Means, Standard Deviations and Value Ranges:
Language Performance Measures

Language Performance	$\bar{X}$	SD	Value Range
Y_1 Peabody Picture Vocabulary Test-Revised	109.98	13.96	81.00 to 138.00
Y_2 Formulated Sentences	44.45	11.28	23.00 to 75.00
Y_3 Mean Length of Utterance	9.56	1.71	6.40 to 13.34
Y_4 Listening Grammar	20.95	5.59	9.00 to 38.00
Y_5 Mean Judged Fluency	6.63	.26	5.89 to 6.98
Y_6 Mean Judged Semantic Complexity	6.61	.24	5.90 to 7.00

Table 6

Inter-Correlation Matrix for All Possible Pairings of Variables

	X_1	X_2	X_3	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6
X_1 Verbal Fluency	1.00	.800**	.679**	.123	-.013	-.022	-.106	-.082	.112
X_2 Verbal Originality		1.00	.727**	.247	.059	.209	.017	-.252	.039
X_3 Verbal Flexibility			1.00	.321*	.268	.106	.201	-.096	-.088
Y_1 Peabody Picture Vocabulary Test-R				1.00	.218	.477**	.469**	-.108	-.017
Y_2 Formulated Sentences					1.00	.251	.195	.208	-.435**
Y_3 Mean Length of Utterance						1.00	.448**	-.484**	-.369*
Y_4 Listening Grammar							1.00	-.205	-.285
Y_5 Mean Judged Fluency								1.00	.268
Y_6 Mean Judged Semantic Complexity									1.00

* $p < .05$

** $p < .01$

Table 7

R^2 Values for Best Three-Variable Model Using Verbal Creativity Measures as Predictor Variables and Language Tasks as Criteria Variables

Criteria Variable	R^{2*}
Y_1 PPVT-R	.135
Y_2 Formulated Sentences	.144
Y_3 Mean Length of Utterance	.143
Y_4 Listening Grammar	.149
Y_5 Mean Judged Fluency	.110
Y_6 Mean Judged Semantic Complexity	.062

*Note: All R^2 values were found to be nonsignificant at the .05